

PATENT  
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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Hirokazu KANEKIYO et al.	Art Unit: 1742
Serial No.: 09/986,390	Examiner: J. Sheehan
Filed: November 8, 2001	
Title: NANOCOMPOSITE MAGNET AND METHOD FOR PRODUCING SAME	

## DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

We hereby declare that we are the inventors of the present application.

We hereby declare that we invented all of the subject matter disclosed in U.S. Patent Application No. 09/986,390.

We hereby provide attached Exhibit A that clearly further illustrates and establishes the substantially improved magnetic properties,  $B_r$ ,  $H_{ci}$ , and  $(BH)_{max}$  of our claimed invention in the present application.

We hereby declare that the entries in the Table of Exhibit A are accurate.

We hereby declare that Examples 2, 4, and 8-13 in the Table of Exhibit A correspond to Examples 2, 4, and 8-13 in Tables 7 and 8 of our originally filed Specification and are included in the scope of the present claimed invention.

We hereby declare that Examples 21-26 in the Table of Exhibit A are newly provided to further illustrate and establish the substantially improved magnetic properties,  $B_r$ ,  $H_{ci}$ , and  $(BH)_{max}$  of our claimed invention in the present application.

We further declare that Examples 21-26 in the Table of Exhibit A are included within the scope of the originally filed specification of the present application and included in the scope of the present claimed invention.

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We hereby declare that Comparative Examples 1-10 are newly provided to clearly illustrate the substantially improved magnetic properties achieved by the present claimed invention.

We hereby declare that that the substantially improved magnetic properties of our claimed invention were unexpected.

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Table

Sample No.	Composition (at%)							Chill Roller surface velocity m/sec	Heat treatment temperature °C	Magnetic properties			
	Nd	Fe	B	C	Ti	M				Br (mT)	H <sub>ci</sub> (kA/m)	(BH) <sub>max</sub> (kJ/m <sup>3</sup> )	
example 2	9.0	bal	14.0	-	3.0	Nb1.0	15	720	867	940	115		
example 4	9.0	bal	14.0	-	4.0	Nb1.5	15	660	868	925	113		
comparative 1	9.0	bal	14.0	-	6.0	Nb1	15	620	780	590	71		
example 8	9.0	bal	12.6	1.4	4.0	0	15	760	810	987	107		
comparative 9	9.0	bal	11.2	2.8	4.0	Co0.4	15	740	770	658	80.8		
comparative 2	9.0	bal	11.2	2.8	0	Co0.4	15	740	730	389	51		
example 10	9.0	bal	9.9	1.1	3.0	Nb0.5	15	700	880	788	124		
comparative 3	9.0	bal	9.9	1.1	0	Nb0.5	15	700	760	551	70		
example 11	9.0	bal	11.7	1.3	3.0	0	15	780	810	764	101		
comparative 4	9.0	bal	11.7	1.3	0	0	15	780	680	363	53		
example 12	9.0	bal	12.6	1.4	5.0	Si1	15	740	780	955	100		
comparative 5	9.0	bal	12.6	1.4	0	Si1	15	740	650	240	38		
example 13	9.0	bal	13.3	0.7	3.0	Nb1	15	600	810	1080	107		
comparative 6	9.0	bal	13.3	0.7	0	Nb1	15	640	620	412	49		
example 21	9.05	bal	10.31	-	2	0	15	680	877	723	121		
example 22	9.00	bal	11.00	-	3	0	15	700	863	892	124		
example 23	8.76	bal	11.00	-	4	0	15	700	869	786	120		
comparative 7	9.08	bal	10.31	-	0	0	15	740	888	488	90		
example 24	9.06	bal	10.31	-	2	Cr1	15	640	845	648	102		
comparative 8	9.06	bal	10.31	-	0	Cr1	15	640	890	579	89		
example 25	8.00	bal	10.30	-	3	Cr3	15	660	815	660	94		
comparative 8	8.00	bal	10.30	-	0	Cr3	15	660	797	534	80		
example 26	8.00	bal	13.30	-	2	Zr1	15	700	750	527	86		
comparative 10	8.00	bal	13.30	-	0	Zr1	15	700	720	484	74		